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BHP's dispute with ExxonMobil puts LNG plan in doubt

11-04-05 As other major Australian projects rush to meet growing demand for LNG in China and the US, BHP Billiton's A\$ 5 bn (\$ 3.9 bn) Scarborough venture has been hit by a dispute with joint venture partner ExxonMobil. In an escalation of a disagreement that first emerged last year, ExxonMobil said that it regards Scarborough's gas as uneconomic, despite high energy prices and intense marketing efforts by partner BHP on the US West Coast.

"ExxonMobil believes that Scarborough is unlikely to be commercially viable in the near term, so we do have a difference of opinion," ExxonMobil's Australian chairman Mark Nolan told at the Australian Petroleum Production & Exploration Association conference.

In contrast, BHP energy president Phil Aiken said that he expects to gain approval later this year from US authorities for the company's proposed Cabrillo port LNG receiving terminal, offshore California.

"If that is successful and we do get Cabrillo port up, then obviously we have a market for Pilbara LNG," he said, in a reference to Scarborough. BHP's Pilbara plan includes a major LNG plant at Onslow in Western Australia that would process Scarborough's gas. But Nolan said that US approvals for Cabrillo will not change ExxonMobil's view that Scarborough is uneconomic based on current reserves.

The operator and 50 % owner of Scarborough, ExxonMobil is focusing instead on the A\$ 11 bn Gorgon LNG development, managed by ChevronTexaco. ExxonMobil also believes that BHP's estimate of eight trillion cf of gas reserves for Scarborough is "very high", Nolan said.

"We don't agree with their assessment," he said, disputing comments earlier by Aiken that recent BHP appraisal work has increased the company's confidence in reserves. Asked whether the dispute amounted to irreconcilable differences, Nolan said ExxonMobil believes the Scarborough "marriage" is "worth keeping", but it "does need a joint venture agreement and decision to proceed".

Nolan also disagreed with Aiken's comment that the results of a major joint drilling program on the Bass Strait field offshore southern Australia has been a "disappointment" for the partners.

"We've drilled some wells and found some more gas, but really nothing of any materiality," Aiken told.

But Nolan said that the drilling program is ongoing after starting in the fourth quarter of 2004.

"We've had a couple of less than optimum wells but I'd also say there is a long way to go yet," he said. "So I wouldn't make any firm conclusions -- I'd say that comment (from Aiken) is premature." However, he agreed with BHP that Bass Strait's oil production is declining rapidly. It is likely to drop to around 50,000 bpd of oil in 5-10 years time, compared to current levels of around 120,000 bpd and a peak in the mid-1980s of around 500,000 bpd, he said.

In contrast to the BHP-ExxonMobil dispute, the proposed Gorgon venture received a boost when project partner Shell said that it will take up to 2.5 mm tpy of LNG for its half-owned Energia Costa Azul terminal in Baja California, starting in 2010. The deal is worth more than \$ 10 bn over 20 years, Shell said.

"It increases the prospects for Gorgon taking a final investment decision in mid-2006 as a quarter of the project's proposed gas volumes are now committed," a Shell spokesman said.

The Gorgon venture, half-owned by operator ChevronTexaco, is proposing to export 10 mm tpy of LNG to China and North America. The Gorgon partners -- Shell and ExxonMobil each own 25 % -- are also trying to finalize a A\$ 30 bn LNG export deal with China.

Elsewhere in Western Australia, Woodside Petroleum is continuing talks with potential customers for its 50 %-owned offshore Browse gas field. China and the US West Coast are "obvious" markets for Browse, although Japan and Korea have also shown a lot of interest in the project, Woodside CEO Don Voelte told.

Woodside plans to drill up to three appraisal wells on Browse later this year to give it greater confidence in the field's gas resources, currently estimated at more than 20 tcf, he said. There is "scope" for Browse to justify two LNG processing trains of 6 to 7 mm tpy each, that would be built onshore near Broome.

BHP and ChevronTexaco are also partners in Browse along with Shell and BP. Production could start in 2011 or 2012, Voelte said.

He reiterated that Woodside hopes to approve the multibillion dollar fifth train expansion of the North West Shelf LNG venture by midyear, although the company is still finalizing contract "rollovers" with existing Japanese customers. Woodside also wants to move quickly to develop its recent Pluto gas discovery, possibly as an extension of the North

Nest Shelf facilities, he said.

Woodside is operator and one-sixth owner of the North West Shelf.

source: Dow Jones

Exxon goes to Scarborough field

FINANCIAL REVIEW

- Companies and Markets
- Ian Howarth
- 577 words
- 03 May 2006
- Australian Financial Review
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The world's biggest oil company, ExxonMobil, has changed tack and may back BHP Billiton's plans to develop the Scarborough gas field off the north-west coast of Western Australia.

It would give Australia's multibillion-dollar liquefied natural gas industry a major boost while demand for LNG, particularly in Asia, is soaring.

BHP Billiton has spent a year and several million dollars evaluating the Scarborough field, which it owns in partnership with ExxonMobil.

Analysts said it contained enough gas to support a plant producing 5 to 10 million tonnes of LNG a year for up to 20 years.

Until this week, ExxonMobil had refused to join BHP Billiton's evaluation program, arguing that Scarborough was too small.

But with up to eight potential LNG developments, worth up to \$50 billion, gathering pace around the north coast of WA, ExxonMobil has changed its stance.

Shell and Woodside are each considering LNG projects in the Browse Basin area north of Broome, while Chevron is close to finalising an investment decision on its \$10 billion Gorgon project.

ConocoPhillips and Santos are studying a plan to double the size of their Bayu-Undan LNG project in the Timor Sea while Shell and Woodside still hope develop their Greater Sunrise gas fields close to East Timor in the Timor Sea.

The Scarborough field is located in deep water about 300 kilometres west of Karratha, well beyond the offshore North-West Shelf project and further west than the Gorgon project.

A year ago, BHP Billiton proposed a stand-alone LNG plant near Onslow, south of Karratha, as a possible development option.

ExxonMobil disagreed and while allowing BHP Billiton to proceed with a drilling and evaluation program at Scarborough, refused to contribute financially or provide any technical assistance to its partner.

ExxonMobil spokesman Rob Young said BHP Billiton's work in the past year had "enhanced our view" of the potential for the commercial development of the Scarborough field. ExxonMobil's change of heart meant that the world's biggest oil company was now "looking to optimise development [of Scarborough] using all means at our disposal", he said.

BHP Billiton has proposed piping the gas from Scarborough to the WA coast, converting it to LNG in a purpose-built plant and transporting the liquid gas to the west coast of the US where gas prices have surged in the past year as a result of rising demand and falling local output.

It has embarked on a long process to win approval in the US for the construction of an LNG import terminal at Cabrillo port on the Californian coast. But vocal local opposition has led to the application being delayed by the US Coast Guard and local regulatory authorities.

Mr. Young would not elaborate on whether ExxonMobil would repay a share of the capital invested by BHP Billiton, or whether it would contribute its half of costs from now on.

"It's still early days. This is a small first step. We'll be working on the program," Mr Young said, noting it was too soon to talk about any possible commercial development of the field.

KEY POINTS

- ExxonMobil owns the gas field off north-west WA with BHP Billiton.
- It had refused to join its partner's evaluation program in the past year.
- It says it now sees the potential for commercial development.

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▶ [E-Mail This Story](#) ▶ [Printer-Friendly Format](#)**Exxon Joins BHP in Seeking to Develop Scarborough Gas (Update1)**

May 2 (Bloomberg) -- Exxon Mobil Corp., the world's biggest oil company, has withdrawn its resistance to the development of the Scarborough gas field in Australia, potentially clearing the way for a A\$4 billion (\$3 billion) project with BHP Billiton.

Appraisal drilling over the past 12 months has indicated that the field may be profitably developed, Rob Young, a spokesman at Exxon Mobil's Australian unit, said. Exxon Mobil is considering "all options" and hasn't agreed that the liquefied natural gas project proposed by BHP is the best way to develop the field, Young said today in an interview.

BHP, which owns 50 percent of the field, wants to build a LNG plant near Onslow in Western Australia's Pilbara region to export gas from Scarborough to its proposed Cabrillo Port import terminal off California. Exxon Mobile said last year it disagreed with Melbourne-based BHP's estimate of reserves at Scarborough and doesn't believe the field is commercially viable.

"If Exxon Mobil are starting to come round and they start to work together for it then it does change the parameters for that project," said Andrew McManus, managing consultant for Australasia Gas and Power at Wood Mackenzie Consultants Ltd.'s Sydney office. "The project couldn't even be considered serious when there was that non-alignment of the parties."

Appraisal Wells

BHP Billiton, Australia's biggest oil and gas producer, recently completed a seismic survey in the Scarborough area and three additional appraisal wells, Emma Meade, a spokeswoman, said today in an e-mail. BHP funded 100 percent of the appraisal work, she said.

"The work over the past 12 months has certainly enhanced our view about the potential resource base" at Scarborough, Exxon Mobil's Young said. "We're looking to try to find a commercial development of Scarborough as soon as possible."

BHP estimates that the Scarborough field, which lies about 280 kilometers (174 miles) off the Western Australian coast, could hold about 8 trillion cubic feet of gas, and more if the smaller Jupiter field in an adjacent BHP-owned permit is included. It is studying a 6 million metric tons a year LNG plant at Onslow, which the Western Australian government estimates may cost about A\$4 billion.

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``As a result of this appraisal program BHP Billiton now considers the field is delineated adequately to support development planning and has a resource size capable of supporting a potential standalone development," Meade said. ``BHP Billiton is now committed to working with Exxon Mobil, the operator of Scarborough, to identify the optimal development plan for a commercial development of Scarborough as soon as possible."

Meeting Of Minds

Young said it was ``a little premature" to comment about the potential size of the gas resource at the field. Exxon Mobil isn't taking part in the Pilbara LNG pre-feasibility study and there's ``no suggestion" it would participate in BHP Billiton's Cabrillo Port terminal project, he said.

``We're certainly coming closer to a meeting of the minds, if you like," Young said.

The field's distance to shore and its lack of condensates, which would make a project more profitable, mean the Scarborough venture still lags behind other prospective LNG projects in Australia in terms of attractiveness for development, Wood Mackenzie's McManus said. Woodside Petroleum Ltd.'s Pluto LNG project, for example, while smaller in reserves, is closer to existing production systems, he said.

Potential

Australia has about eight potential new LNG projects, in addition to an expansion at the Woodside-operated North West Shelf venture, the country's biggest LNG project. The government said in March it plans to work with the nation's A\$17 billion oil and gas industry to almost quadruple LNG exports to more than 50 million tons a year within a decade.

LNG is natural gas cooled to liquid form, reducing it to one-six-hundredth of its original size, for transportation by tanker to destinations not connected by pipeline. On arrival it is turned back into gaseous form for delivery to consumers such as power plants.

To contact the reporter on this story:
Angela Macdonald-Smith in Sydney at amacdonaldsm@bloomberg.net.

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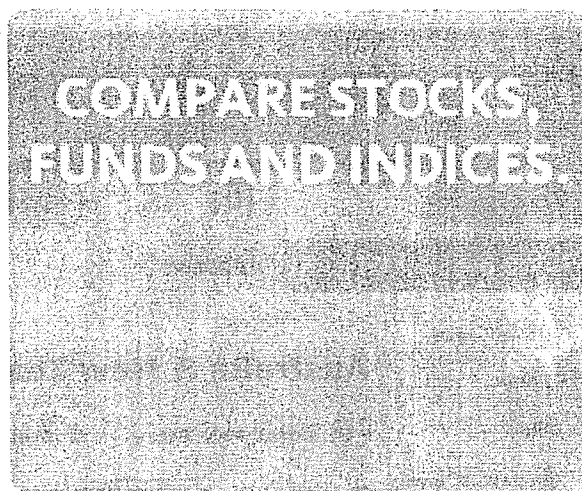
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fuel the ship's steam propulsion system. As a result, LNG ships have reduced emissions compared to conventional oil-fired ships.

* Propulsion Systems – Almost all of the currently operational large LNG ships are steam turbine driven. Steam ships use a boiler that is fired from the ship's natural gas cargo (the boil-off gas referred to above). The boiler can also be fired with heavy fuel oil or in any ratio with natural gas. At sea, the ship normally uses natural gas plus a small quantity of fuel oil (approximately 2 tons per day) for a pilot flame.

As a ship approaches port, the use of fuel oil may increase to about 10 tons per day. The increase occurs because the natural gas fuel supply system is complicated with greater risk of shutdown. Therefore, the additional fuel oil is used for safety to ensure adequate steam supply for propulsion.

Both underway and in port, the power on a steam ship is provided by separate steam turbine-driven generators. There may also be a diesel generator that would be used for emergencies.

At the berth, the main boilers are generally kept running to provide power to the cargo pumps. During cargo unloading, the cargo pumps and ship auxiliary equipment require 5 to 10 megawatts (MW) of power. Part of the fuel used to provide power is LNG; the rest is fuel oil. LNG ships are not currently equipped to receive shoreside power for use during cargo unloading. Generally some LNG is left onboard for the return voyage fuel and for keeping the cargo tanks cold.

Several large diesel electric-powered LNG ships are currently under construction. These ships have four or more diesel-driven electric generators that provide both propulsion and electric power. Ship propulsion is with two electric motors directly connected to the propeller shaft.

The switch to diesel is being driven by several factors. The first is fuel consumption. The overall thermal efficiency of a steam propulsion system is about 28 percent while diesel power is over 40 percent efficient. This increased efficiency would result in large fuel savings, particularly for the new longer distance trade routes. Because of the rarity of steam systems outside of LNG ships, it has become difficult for the ship operators to obtain adequately trained personnel. In addition, locations with steam maintenance capabilities are becoming fewer.

Two approaches are being used for diesel electric-powered LNG ships. One is to use engines that will consume boil-off natural gas with partial heavy fuel oil pilot injection. Under full load, the engine uses 10 to 15 percent oil with the balance being natural gas. At lower power levels, these engines consume a higher portion of fuel oil. At idle they may require 100 percent fuel oil and no natural gas.

The second diesel electric-powered approach uses all heavy fuel oil and no natural gas. On these ships, a system will be installed to reliquefy the boil-off gas and return it to the ship's cargo tanks. Some of these ships may be equipped with secondary low sulfur fuel tanks for port operation.

Ballast Tanks – Sufficient ballast water capacity must be provided to permit the ship to return to the loading port safely under various sea conditions. LNG cargo tanks are not used as ballast tanks because these tanks must contain a minimal amount of LNG in them at all times, even when "empty" in order to keep the tanks cold during normal operation. Consequently, LNG ships must be designed to provide adequate ballast capacity in other locations.

Ballast water tanks of the LNG ships are arranged within the LNG ship's double hull. It is essential that ballast water not leak into the LNG containment system. To reduce the potential for leakage, the ballast tanks, cofferdams, and the walls of the void spaces are typically coated to reduce corrosion. LNG ships are also periodically inspected to examine the coating and to renew it as necessary.

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News Desk

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Exxon opposes BHP plan

SYDNEY:

Disagreement between ExxonMobil Corp and BHP Billiton Ltd over a gasfield off Australia's west coast is threatening to sever the partnership.

Australia-based BHP has said it wanted to build an LNG plant costing billions of dollars in Western Australia using gas from the Scarborough field in the Indian ocean, while US-based ExxonMobil says the field may not be commercially viable at present.

"For Exxon, Scarborough is not a priority. We see it as a priority. They do not want to fast track it. We want to fast track it," BHP Billiton Energy Group president Philip Aiken said.

"If they eventually want to get out of Scarborough, I'm sure there are plenty of companies that would want to take their place," he added.

BHP Billiton is backing Scarborough in the hope that California will next year approve construction of terminals to accept LNG — gas that is chilled for easier transport — opening up one of the world's single largest gas markets. But ExxonMobil does not share BHP Billiton's enthusiasm.

"It's in deep water, it's 280 km offshore, there is significant resource uncertainty and its relatively small," Chris Welberry, an ExxonMobil spokesman, said.

Welberry declined to comment on whether ExxonMobil would consider selling its stake, but said: "...we clearly have a difference of opinion with the joint venturer on the timing for additional evaluation of the field."

BHP estimates Scarborough has proven and probable reserves of 8 trillion cubic feet (tcf) of gas. Proven and probable reserves have an around 70 per cent chance of existing.

ExxonMobil declined to release its estimates of the field.

The Western Australia government, however, estimates the field only contains between 4.4 tcf and 5.2 tcf based on 90 per cent and 50 per cent probability of recovery respectively.

BHP unveiled plans for the LNG plant in September, saying it was seeking to supply the Asian market and the US west coast via its proposed Cabrillo Port project near Los Angeles.

Aiken said he believed there was a 50:50 chance Cabrillo would be approved, but said BHP would continue to push ahead with developing Scarborough even if that project did not come off.

Australia — with an estimated 150 tcf of proven and probable gas reserves — is eager to

get a foothold in the US, where around 30 new LNG import terminals have been proposed.

The US imports of LNG are estimated to jump to 440 billion cubic feet (bcf) this year from 370 bcf in 2003, according to US government data.

<http://au.biz.yahoo.com//041203/19/2bxl.html>

Friday December 3, 05:36 PM

UPDATE 1-BHP Billiton, Exxon Mobil spar over gas field

(Updates with Exxon Mobil comment)

By James Regan and Joanne Collins

SYDNEY, Dec 3 (Reuters) - Disagreement between Exxon Mobil Corp. XOM.N and BHP Billiton Ltd./Plc. (ASX: BHP.ax) over a gas field off Australia's west coast is threatening to sever the partnership.

Australia-based BHP BLT.L said on Friday it wanted to build a liquefied natural gas (LNG) plant costing billions of dollars in Western Australia using gas from the Scarborough field in the Indian ocean, while U.S.-based Exxon Mobil says the field may not be commercially viable at present.

"For Exxon, Scarborough is not a priority. We see it as a priority. They do not want to fast track it. We want to fast track it," BHP Billiton Energy Group President Philip Aiken told a briefing on Friday.

"If they eventually want to get out of Scarborough I'm sure there are plenty of companies that would want to take their place," he added.

BHP Billiton is backing Scarborough in the hope that California will next year approve construction of terminals to accept LNG -- gas that is chilled for easier transport -- opening up one of the world's single largest gas markets.

But Exxon Mobil does not share BHP Billiton's enthusiasm.

"It's in deep water, its 280 km (173 miles) offshore, there is significant resource uncertainty and its relatively small," Chris Welberry, an Exxon Mobil spokesman, told Reuters.

Welberry declined to comment on whether Exxon Mobil would consider selling its stake, but said: "...we clearly have a difference of opinion with the joint venturer on the timing for additional evaluation of the field."

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Australia -- with an estimated 150 tcf of proven and probable gas reserves -- is eager to get a foothold in the U.S. where around 30 new LNG import terminals have been proposed.

U.S. imports of LNG are estimated to jump to 440 billion cubic feet (bcf) this year from 370 bcf in 2003, according to U.S. government data.

BHP plans to build the LNG plant at Pilbara, around 4.5 km (2.8 miles) southwest of Onslow in northwest Australia.

It is examining a number of concepts for field development that would connect a single train with a capacity of about 6 million tonnes per annum.

BHP is conducting a pre-feasibility study on the project which it expects to be completed by the first quarter of 2005. If the project was sanctioned, it has said construction could begin in early 2006.

BHP shares closed down 1.5 percent at A\$15.28 in a flat overall market. (\$1=A\$1.30)

April 11, 2005

The Age

BHP and ExxonMobil in gas dispute

<http://www.theage.com.au/news/Business/BHP-and-ExxonMobil-in-gas-dispute/2005/04/11/1113071909344.html?oneclick=true>

A dispute between the owners of the Scarborough gas field off the Western Australian coast escalated as BHP Billiton Ltd's joint venture partner disputed the size of the reserves.

BHP Billiton Petroleum chief executive Philip Aiken said three recent appraisal wells had increased certainty about the field, which it estimated to contain eight trillion cubic feet of gas.

"That's our view, but ExxonMobil has a lower expectation than we did," Mr Aiken said.

BHP Billiton and ExxonMobil equally own the Scarborough field, but ExxonMobil is the operator.

"ExxonMobil believes Scarborough is unlikely to be commercially viable in the near term," ExxonMobil Australia chairman Mark Nolan told journalists on the sidelines of the Australian Petroleum Production and Exploration Association's annual conference in Perth.

"So we do have a difference of opinion.

"Our view is that BHP's assessment (of reserves) is very high and we don't agree."

Mr Nolan said ExxonMobil was aware that BHP Billiton has recently drilled some more wells but it did not have access to the data yet.

"But even so, we are of the view that their assessment is very much on the high side."

Mr Aiken said BHP Billiton hoped to be able to push the button on its planned Cabrillo Port liquefied natural gas terminal in California by the end of 2005.

That access to the energy hungry North American west coast would improve the commercial viability of Scarborough, he said.

"Our view at the moment is that if we could get Cabrillo Port up then we'd have a market and that would make Scarborough more feasible."

But Mr Nolan said development of Cabrillo Port affected BHP Billiton's share of the Scarborough gas and did not change ExxonMobil's view of the project, which would need joint venture approval to proceed.

"When we see our side of the project, which is the development and sale of 50 per cent of the offshore gas, we don't see that as commercially viable at this stage," Mr Nolan said.

Exxon OKs Scarborough



- Finance
- MATP
- Nigel Wilson Energy writer
- 446 words
- 03 May 2006
- The Australian
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US energy giant Exxon Mobil has surprisingly reversed its long-held opposition to development of the Scarborough gas field deep in the Indian Ocean, but fell short of agreeing to BHP Billiton's plans to use the gas to supply North America.

According to a company spokesman, the decision to back development followed appraisal drilling undertaken at its own cost by BHP, which is a 50 per cent Scarborough partner.

The gas field is in water about 900m deep in the Carnarvon Basin, 280km off the coast of Western Australia.

News of the about-turn came as The Australian learned the independent US group Amerada Hess has been evaluating Australian gas discoveries as possible inclusions in its global portfolio of producing operations.

It is understood Hess has looked at both Scarborough and Pluto reservoir, which is owned by Woodside Petroleum. But it could not be confirmed yesterday whether the US company would enter into negotiations for stakes in known reservoirs.

Woodside chief executive Don Voelte said last night that he was not aware of any formal approach by Amerada Hess.

An Exxon spokesman in Melbourne said the group, the world's biggest oil and gas operator, was "considering all options" but stressed it had not agreed that BHP's LNG plans were the best way to develop the reservoir.

There would be a joint evaluation to determine the best way forward.

For the past two years there has been a public dispute between BHP and Exxon concerning the commercial prospects for Scarborough.

BHP has recorded that Scarborough contains around 8 trillion cubic feet of gas, which it believes is sufficient to support a 6 million tonnes a year LNG plant, based onshore at the northern West Australian town of Onslow, for 25 years.

But Exxon has previously argued that Scarborough's recoverable reserves are only about 5tcf, which is regarded as insufficient to sustain a world-scale LNG project.

A BHP spokeswoman said yesterday that the Australian company had recently completed an extensive appraisal program for Scarborough which began in 2004.

"As a result of this appraisal program BHP Billiton now considers the field is delineated adequately to support development planning and has a resource size capable of supporting a potential stand-alone development," she said.

However, the company has yet to reveal by how much the Scarborough reserve has increased as a result of the appraisal program. "BHP Billiton is now committed to working with Exxon Mobil, the operator of Scarborough, to identify the optimal development plan for a commercial development of Scarborough as soon as possible," the spokeswoman said.

BHP and Exxon in closer step

The Sydney Morning Herald

- Business
- Jamie Freed
- 380 words
- 03 May 2006
- The Sydney Morning Herald

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BHP Billiton's plans to build a liquefied natural gas terminal in California got a boost yesterday when Exxon Mobil indicated the \$4 billion Scarborough gas joint venture looked more likely to proceed.

BHP and Exxon each have a half share in the West Australian gasfield but Exxon is the operator.

In late 2004 Exxon said Scarborough was unlikely to be developed soon because it was far from shore and there was uncertainty about its size.

In contrast, BHP has always had faith in the project and plans to ship liquefied natural gas from Scarborough to its proposed \$US800 million LNG terminal off California.

Despite the joint venture arrangement, BHP funded three successful appraisal wells and a 3D seismic survey by itself last year in a bid to demonstrate the project was commercially viable.

Exxon spokesman Rob Young yesterday indicated the US oil group had become more optimistic about Scarborough thanks to BHP's efforts.

"Our view has certainly been enhanced about the potential resource base," he said. "We are working on joint evaluation with them and looking to optimise development."

BHP would like to build an onshore LNG plant in the Pilbara to develop its share of the gas from Scarborough. The Pilbara LNG project is undergoing a pre-feasibility study but Exxon said it was looking at other options.

The Scarborough project is technically challenging because it is 280 kilometres offshore in water 900 metres deep. For comparison, the North-West Shelf is about 125 metres deep and the \$11 billion Gorgon gas project is in about 200 metres of water.

The partners declined to give a timeline for the Scarborough development. But BHP is still pushing ahead with its Californian LNG terminal plan, despite fierce opposition from local residents.

The Malibu Times reported that BHP officials were booed by a crowd of 300 people at a community meeting last month.

"We don't want your pizza, we don't want your barbecue parties and we sure as heck don't want your LNG terminal in our city!" former Malibu mayor Andy Stern yelled.

"I have never before seen Malibu with such a feeling of unity on anything," he said.

Background on Proposed Cabrillo Port Liquefied Natural Gas Facility

BHP Billiton, International (BHPB) has proposed to construct a new liquefied natural gas (LNG) deepwater port approximately 14 miles offshore of Ventura County, California. The proposed deepwater port, "Cabrillo Port," would consist primarily of a floating storage and re-gasification unit (FSRU) connected to two pipelines laid on the ocean floor. The pipelines would reach land at a station in Oxnard, California. The project is subject to the Deepwater Port Act, and must comply with all applicable environmental laws such as the Clean Air Act (CAA). As a result, BHPB must obtain an air permit from EPA prior to construction.

Air Quality Designation

The proposed location for the FSRU is in Federal waters off the coast of Ventura County, California. The location of the proposed project does not have a formal federal designation. Section 107 of the CAA, and Code of Federal Regulations §81.305 provide for air quality area designations and classifications within the state of California. The applicable air district for Ventura County is the Ventura County Air Pollution Control District (VCAPCD). Two islands (Anacapa and San Nicholas) located off the coast of California are included within the VCAPCD. These islands, which are part of the four northernmost islands of the Channel Islands, are within California state boundaries and are designated as unclassifiable/attainment under the federal standards. EPA considered factors such as the location of the FSRU in relation to the Channel Islands and the mainland of Ventura County, the current uses of the Channel Islands, and the amount of emissions and the air quality impact to be expected from the stationary source. As a result of this consideration, EPA is proposing to permit Cabrillo Port in the same manner as sources on the Channel Islands which are included within the VCAPCD.

Proposed Cabrillo Port Project Details

Liquefied natural gas is shipped at about -260 degrees Fahrenheit in specially designed double-hull ships (or carriers). For this project, it will be imported to the U.S. from Malaysia, Indonesia and Australia. The carriers would unload the LNG to the FSRU (see Figure 1) for re-gasification. Each LNG carrier berthing, unloading, and de-berthing event would last approximately 20 hours and would occur two to three times per week. Once re-gasified, the natural gas would be transported by the two subsea pipelines to a connecting station near Oxnard. Natural gas would then be distributed through the existing onshore natural gas transmission system owned and operated by Southern California Gas Company.

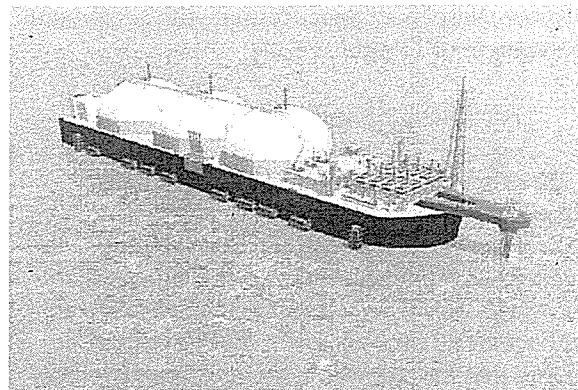


Figure 1: Floating storage and re-gasification unit

Major Equipment Onboard the FSRU

The proposed design for Cabrillo Port includes three spherical storage tanks with a total capacity of 9,639,000 cubic feet, which would allow the FSRU to re-gasify up to 1.5 billion cubic feet of LNG per day using submerged combustion vaporizers (SCVs). Additional equipment on the FSRU will include eight SCVs, four generator engines (three primary engines and one backup), one diesel fuel storage tank, and other emergency and auxiliary support equipment.

Air Emissions from Cabrillo Port Stationary Units

The annual emissions from the FSRU will be limited to the following:

NO _x :	66.05 tons per year (tpy)
ROC:	28.66 tpy
CO:	171.30 tpy
SO ₂ :	0.42 tpy
PM ₁₀ :	12.13 tpy

Emission Controls

Emissions from Cabrillo Port are proposed to be controlled through a combination of control devices and operational limitations. The generator engines will be equipped with selective catalytic reduction systems for control of nitrogen oxides, and oxidation catalysts for control of CO and ROC emissions. In addition the SCVs (see Figure 2) will utilize low-NO_x burners. The equipment onboard the FSRU will be fueled primarily on natural gas. The support vessels will also be fueled on natural gas rather than more polluting marine bunker fuel, which is conventionally used. Diesel fuel will only be used during limited periods in emergency and fuel-backup situations. All diesel used must meet the stringent California Diesel Fuel Specification with a maximum sulfur content of 15 ppm.

Air Quality Improvement Project

The applicant has committed to air quality mitigation. BHPB has entered into contracts to retrofit two marine vessels (long haul tugs) by replacing two propulsion engines and two auxiliary engines with modern low emitting engines (Tier 2 compliant diesel fired engines). BHPB currently estimates that the repowering of one Sause Brothers tug could result in emission reductions of approximately 123 tons per year of NO_x, and the repowering of one Olympic Tug and Barge tug could result in emission reductions of approximately 96 tons per year. However, EPA has not yet completed its own analysis of the emission reductions to be expected from retrofitting these marine vessel engines.

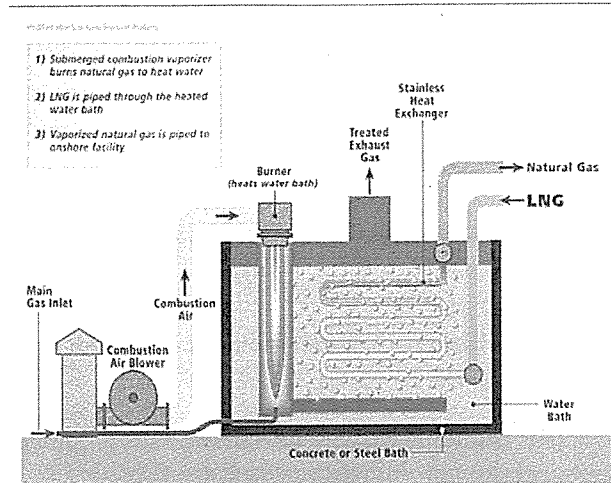


Figure 2: Submerged combustion vaporizer
(Source: Modified after Sumitomo Precision Products)

EPA Contact Information

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California Official Raises Doubts on Australian LNG Plan

By STEPHEN BELL

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OF DOW JONES NEWSWIRES

PERTH -- Raising doubts about multibillion dollar plans by Australian firms to ship liquefied natural gas to the U.S., a Californian energy official said Friday that the state is still unsure whether it will accept LNG imports.

"We don't yet have a position on whether LNG should come to California," said Dave Maul, manager of California Energy Commission's Natural Gas and Special Projects Office.

Neither the state's government nor Governor Arnold Schwarzenegger has "stated a position or a preference as to whether we should have LNG terminals", Maul told reporters and industry officials at a video conference broadcast to the U.S. consulate in Perth.

Maul's caution on the fuel comes in the midst of applications by BHP Billiton (BHP) and Woodside Petroleum Ltd (WPL.AU) to set up LNG import terminals off the coast of California.

Last year Australian Prime Minister John Howard met with Schwarzenegger to help promote Australian LNG projects.

"Right now we are open to considering all options, including LNG," Maul said, adding that California is looking to diversify gas supplies, partly to keep a lid on rising prices.

California imports 85% of its natural gas via conventional pipelines with the remainder sourced from dwindling local production.

"Our concern here is really on prices and the availability of future supplies," Maul said, adding that California is spending around US\$10 billion a year on natural gas purchases.

"We expect that 2005 costs will be much higher than 2004 given our commodity prices," he said. The state is trying to cut its gas bill 10% via conservation efforts and is looking at renewable sources, he said.

Richard Foley, senior case manager, office of energy projects for the Federal Energy Regulatory Commission, said that the U.S. is now considering "20-odd" proposals for LNG terminals.

Obtaining environmental approvals generally takes 1-2 years, followed by a construction period of up to three years, he said. The U.S. has several existing LNG import terminals on the east coast.

California's Maul said that his state is considering three "active" LNG projects, including BHP's Cabrillo Port venture and Woodside's Clearwater project.

A possible barrier is the lack of public knowledge about the fuel that has led to "speculation and myths" about the safety of importing LNG into California, Maul said.

"Obviously with the newness of LNG, and the lack of experience that local citizens have with LNG, they will be raising a lot of questions," he said, adding that the community is probably "split" between those in favor and against.

Turf War Between US Regulators

BHP energy president Phil Aiken said this week that he expects to gain approval late this year from U.S. authorities for the company's Cabrillo venture. However, BHP has been hit by a dispute with ExxonMobil Corp.

(XOM) over the Scarborough gas field, offshore Western Australia, which has been earmarked by BHP for Cabrillo.

ExxonMobil said that it regards BHP's A\$5 billion LNG plan for Scarborough as nonviable, despite high energy prices.

Another potential roadblock for Australian LNG suppliers is a turf war between U.S. state and federal regulators.

A House panel this week voted to give federal regulators primary authority over siting of LNG terminals along U.S. coasts, shunting aside states seeking control because of safety concerns.

The provision, one of the most hotly debated in a massive energy bill before Congress, would nullify legal attacks on the Federal Energy Regulatory Commission by the state of California, which is opposing a terminal at Long Beach proposed by Mitsubishi and ConocoPhillips.

Woodside, meanwhile, has applied to the U.S. Coast Guard for a deepwater port license for Clearwater which involves conversion of the Grace oil and gas platform 21 kilometers off Ventura County.

Operator of the giant North West Shelf LNG venture, Woodside could also target West Coast markets with product from its Browse gas resource, also located off the coast of Western Australia.

Woodside is the operator and has about 50% of Browse, which contains 20.5 trillion cubic feet of gas.

The other Browse owners are ChevronTexaco with 16.67%, BP PLC (BP) with 16.67%, Royal Dutch/Shell Group with 8.33% and BHP with 8.33% -- all part owners of the North West Shelf venture.

The U.S. Department of Energy predicts natural gas consumption in the country will rise from 22 trillion cubic feet in 2003 to more than 30 tcf per year in the next two decades, with LNG imports contributing nearly 6 tcf.

U.S. Federal Reserve Chairman Alan Greenspan has on more than one occasion warned that shortages of natural gas threaten to drive heavily dependent industries out of the U.S. to foreign countries with more supply.

The first Australian LNG to penetrate the U.S. market could hail from ChevronTexaco Corp.'s (CVX) A\$11 billion Gorgon venture offshore Western Australia.

Gorgon project partner Shell this week said that it will take up to 2.5 million metric tons per year of LNG for Semptra Energy's Energia Costa Azul terminal in Baja California, Mexico, starting in 2010.

Shell has rights to half the capacity of the terminal, which is currently under construction.

It is expected that some of Semptra's LNG will make its way into the U.S. market via existing pipeline networks.

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Australian firm proposes LNG terminal in ocean off Malibu coast

By TIM MOLLOY
Associated Press Writer

In the latest proposal to import liquefied natural gas to California, an Australian company unveiled plans Wednesday to place a terminal about 22 miles off the coast of Malibu.

The plan by Woodside Energy attempts to sidestep fears from environmentalists and some residents that importing natural gas is too dangerous because it is volatile and potentially explosive in its gaseous state.

Woodside wants to ship supercooled LNG from Australian fields to the California coast in specially designed tankers.

But unlike other proposed terminals off the West Coast, the plan doesn't require any large, permanent structures.

Instead of feeding vaporized natural gas into a pipeline at a terminal, the delivery tanker would take in an underwater buoy attached to a flexible pipe leading to a larger pipe along the ocean floor.

The larger pipe would come ashore in an industrial area near Los Angeles International Airport, said Jane Cutter, president of Woodside Natural Gas, a subsidiary of Woodside Energy.

The location of the buoy would not interfere with coastal views, shipping lines, or natural habitat, Cutter said.

Another company using different technology has developed a similar delivery method in the Gulf of Mexico, according to Woodside.

Woodside hopes to begin shipping between 2010 and 2014 and to meet up to 15 percent of the state's natural gas needs.

Environmentalists who have challenged other proposed LNG terminals said Woodside's proposal sounds safer than the others. But they stressed that the state may not need to import LNG at all.

Linda Krop, an attorney representing the Santa Barbara-based California Coastal Protection Network, said the state could gain more energy through conservation, improved efficiency, and focusing on renewable resources like wind, solar, and geothermal energy.

"We can achieve at least three times as much energy through a cleaner, safer approach," said Krop, who is representing the group as chief counsel of the Environmental Defense Center in Santa Barbara.

Environmentalists are pushing for state legislation that would require a review of proposed LNG projects.

Energy companies say shipping LNG from other countries could keep U.S. natural gas prices low as domestic supplies dwindle.

U.S. regulators have approved several coastal LNG terminals in Texas, Louisiana and Massachusetts, but companies have had trouble finding a home on the U.S. Pacific coast.

Mexico has approved two LNG terminals on its Pacific coast, one under construction by Semptra Energy and another by Chevron Corp., though Chevron hasn't begun construction.

Other proposed terminals in California include BHP Billiton's Cabrillo Port project off Malibu; Crystal Energy's proposal

- off Oxnard; and a Long Beach plan by Mitsubishi Corp. and ConocoPhillips.

In Oregon, there are proposals by Calpine at the Port of Astoria, Northern Star Natural Gas at Bradwood Landing, the Jordan Cove Energy Project at Coos Bay, and Port Westward LNG at Clatskanie.

On the Net:

Woodside:

Environmental Defense Center:
